Case Report

Anterior Segment Optical Coherence Tomography Guided Nd:YAG Laser Iridocystotomy in Post Traumatic Iris Cyst

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Abstract

A 30 year old female presented with a large post traumatic iris cyst obstructing the visual axis, with a corneal scar inferiorly. Anterior segment optical coherence tomography (AS-OCT) was done to identify the areas of corneal attachment and locate the thinnest area of the cyst. Nd:YAG laser iridocystotomy performed subsequently resulted in immediate deflation of the cyst, excellent restoration of visual acuity and no recurrence till 6 months of follow up. AS-OCT guided laser cystotomy has not been reported previously, to the best of our knowledge.

Keywords: Post traumatic iris cyst; Anterior segment optical coherence tomography; Nd:YAG laser cystotomy

1. Introduction

We describe the case of a large post traumatic iris cyst managed successfully with Nd:YAG laser iridocystotomy. We highlight the role of anterior segment optical coherence tomography (AS-OCT) in this scenario.

2. Case Report

A 30 year old female complained of gradually progressive diminution of vision in her left eye since 2 years, following trauma with a stone. There was no history of pain, watering, redness or ocular surgery in this eye.

On examination, the best corrected visual acuity (BCVA) was 20/20 in the right (OD) and 20/80 in the left eye (OS). The right eye examination was unremarkable. Anterior segment examination of
the left eye showed a large cyst in the inferotemporal part of the iris that was obstructing the visual axis, with iridocorneal touch. The cyst appeared to be thin walled and have clear contents. There was a horizontal corneal scar located inferiorly (Fig. 1). The intraocular pressure (IOP) was 18 mm Hg. On gonioscopy, inferior angle details could not be visualised; the rest of the angles were open. There were no cells or flare in the anterior chamber. An ultrasound B-scan revealed no abnormality.

![Slit lamp photograph of the left eye showing a large irregular iris cyst with a horizontal corneal scar located inferiorly.](image)

**Fig. 1.** Slit lamp photograph of the left eye showing a large irregular iris cyst with a horizontal corneal scar located inferiorly.

The patient underwent AS-OCT of the left eye using RTVue-100 OCT (Optovue, Inc., Fremont, California, USA) with a corneal adaptor module (CAM). This confirmed a smooth inner wall and a clear lumen of the cyst. In addition, it identified areas of corneal attachment and located the thinnest area of the cyst (Fig. 2). Frequency doubled Nd:YAG laser iridocystotomy was employed to treat the cyst, after written informed consent, under cover of anti-inflammatory and anti-glaucoma medications. The settings included 1.8 milli Joules in burst mode with anterior defocus. When the cyst was perforated with laser, some quantity of clear viscous fluid effused into the anterior chamber. The cyst deflated and detached from the corneal endothelium immediately.

On the first post operative day, BCVA improved to 20/20 in the left eye. The cyst disappeared, the visual axis was clear and there were anterior synechiae inferiorly along the horizontal corneal scar (Fig. 3). There was mild flare in the anterior chamber. Fundus examination was within normal limits. AS-OCT revealed the irregular, collapsed cyst with corneal attachment inferiorly (Fig. 4). The patient was put on topical steroids for a week and then followed up regularly. There were no recurrences till 6 months of follow up.
Fig. 2. AS-OCT revealed the thinnest area of the cyst (red asterisk) located superiorly in the medial portion of the cyst (top). This site had no corneal attachment and was selected for laser cystotomy. AS-OCT scan though the middle part of the cyst (bottom) confirmed iridocorneal touch (red arrow).

Fig. 3. Slit lamp photograph of the left eye at one day post operatively showing disappearance of the iris cyst and a clear visual axis. Anterior synechiae were present inferiorly, along with the horizontal corneal scar.
Fig. 4. AS-OCT at one day post operatively showing the collapsed cyst attached to the corneal endothelium inferiorly.

3. Discussion

Secondary iris cysts can develop after intraocular surgery, trauma, inflammation, or prolonged use of topical miotics or prostaglandins (Shields et al., 1984; Rao et al., 2011). Post traumatic iris cysts follow implantation of epithelium into the anterior chamber. These cells proliferate, involve adjacent structures and can take the form of a serous cyst, pearl cyst or epithelialization of the anterior chamber (Maumenee and Shannon, 1956). Compared to primary cysts, secondary cysts have a higher rate of progressive enlargement, complications and recurrences (Rao et al., 2011).

Iris cysts that are small, stable and asymptomatic can be managed by observation and follow up. Indications for treatment include documented growth of the cyst, deterioration of visual acuity, uveitis, glaucoma and / or corneal decompensation. Treatment modalities available are laser puncture (Gupta et al., 2007), cyst aspiration with or without laser photocoagulation (Haller et al., 2003) and / or cyst excision (Rishi et al., 2008). Varying success rates and rates of recurrence have been reported with each of these procedures. Surgical excision of the cyst carries the risk of collateral damage to adjacent structures (Haller et al., 2003; Rishi et al., 2008). Viscodissection of the cyst wall from surrounding structures, aspiration of the cyst contents and photocoagulation of the collapsed cyst wall and base is a less radical approach with good results (Haller et al., 2003). Laser iridocystotomy offers a minimally invasive and effective technique, which can be performed on an outpatient basis. While it has a relatively high rate of recurrence (Gupta et al., 2007), it can be safely repeated without worsening prognosis.

Ultrasound biomicroscopy (UBM) and AS-OCT are both important tools for cross-sectional in vivo imaging of the anterior segment. UBM has been used to analyse the extent of iris cysts, involvement of other structures and also for identifying the thinnest segment of the cyst wall before employing laser puncture (Gupta et al., 2007; Rishi et al., 2008). While UBM is usually successful in delineating details in cases with opaque corneas and in demonstrating the entire cystic lesion, its image resolution is of inferior quality. Also, the patient needs to lie supine during the examination and a
plastic cup with a coupling medium is required (Pong and Lai 2009). This may be difficult especially in children. AS-OCT is a non contact imaging modality based on low optical coherence interferometry that provides high resolution images of tissues. The patient can sit upright as in a slitlamp examination and the imaging is quick and completely non-invasive. However, details posterior to the iris maybe shadowed and these are better imaged with UBM (Pong and Lai 2009). AS-OCT has been used previously to study primary cysts of the iris pigment epithelium (Pong and Lai 2009; Kytasty et al., 2010). We used AS-OCT to evaluate a post traumatic iris cyst. Despite presence of a corneal scar, the cyst could be clearly visualised, with no shadowing and details regarding its lumen, wall and relationship to other structures could be documented. The thinnest area of its wall was identified for performing laser iridocystotomy which resulted in successful deflation of the cyst.

Our patient presented with a secondary post traumatic iris cyst located in the vicinity of a wound following a penetrating injury. Decreased vision owing to obstruction of the visual axis by the cyst necessitated intervention in this case. AS-OCT was used to identify the thinnest section of the cyst wall for performing Nd:YAG laser iridocystotomy. This allowed minimal use of laser energy to achieve the desired puncture of the cyst wall. Laser treatment resulted in a good visual outcome, with no recurrences till one year of follow up. The only sequela was formation of anterior synechiae. Long term follow up is recommended due to the risk of recurrence.

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